UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/630,501	07/30/2003	Robert L. Turner	54599US032	7907

36001 7590 08/20/2008

3M INNOVATIVE PROPERTIES COMPANY
P.O. BOX 33427
ST. PAUL, MN 55133-3427

EXAMINER	
ALEJANDRO, RAYMOND	

ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
08/20/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

LegalUSDocketing@mmm.com
LegalDocketing@mmm.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ROBERT L. TURNER, BRIAN D. FREDERICKSEN, LARRY J. KRAUSE, JEFFREY R. DAHN, DOMINIQUE C. LARCHER, IAN A. COURTNEY, and OU MAO

Appeal 2008-3114
Application 10/630,501
Technology Center 1700

Decided: August 18, 2008

Before CHARLES F. WARREN, THOMAS A. WALTZ, and CATHERINE Q. TIMM, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 1-10 and 15-17. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

I. BACKGROUND

The invention relates to an electrode composition for secondary lithium batteries including an electrode material that is an amorphous mixture of a first metal, which reacts with lithium, and a second metal, which does not react with lithium. (Spec. 1, l. 28 to 2, l. 2; 2, ll. 8-11). A lithium battery formed with such an electrode has improved specific capacity and coulombic efficiency for at least 30 full charge-discharge cycles. (Spec. 2, ll. 23-28). Claim 1 is illustrative of the subject matter on appeal:

> 1. An electrode composition comprising:
> an electrode material consisting essentially of at least one electrochemically inactive elemental metal and at least one electrochemically active elemental metal in the form of an amorphous mixture at ambient temperature that remains amorphous when said electrode composition is incorporated into a lithium battery and cycled through at least one full charge-discharge cycle at ambient temperature.

The Examiner relies on the following prior art references to show unpatentability:

Jeffrey, et al.	EP 0209402 A1	Jan. 21, 1987
Ito, et al. (as translated)[1]	JP H06-325764	Nov. 25, 1994
Kyoko et al.	EP 0750359 A2	Dec. 27, 1996
Kawakami et al. (as translated)[2]	JP 08-050922 A	Feb. 20, 1996
Nakajima et al. (as translated)[3]	JP H10-294112 A	Nov. 4, 1998

[1] We refer to the translation of Ito, et al. prepared for the USPTO by Schreiber Translations, Inc. (PTO 04-2106 March 2004), and made of record in the Office Communication mailed August 31, 2007.
[2] The translation of Kawakami, et al. prepared for the USPTO by FLS, Inc. (PTO 07-6227 August 2007) is made of record in the Office Communication mailed August 31, 2007.

Miyake et al. (as translated)[4]	JP H10-223221 A	Aug. 21, 1998
Turner, et al.	WO 99/49532	Sep. 30, 1999
Kawakami, et al.	US 6,051,340	Apr. 18, 2000
Turner, et al.	US 6,699,336 B2	Mar. 2, 2004

The Examiner maintains the following rejections:

1. Claims 1-10 and 15-17 rejected under 35 U.S.C. § 102(b) as anticipated by Kawakami et al. ("Kawakami JP '922") [5];

2. Claims 1, 3-7, 9, and 17 rejected under 35 U.S.C. § 102(b) as anticipated by Ito et al. ("Ito");

3. Claims 1, 4-5, 7, and 17 rejected under 35 U.S.C. § 102(b) as anticipated by Nakajima et al. ("Nakajima");

4. Claims 1-10 and 17 rejected under 35 U.S.C. § 102(b) as anticipated by Miyake et al. ("Miyake");

5. Claims 1-10 rejected under 35 U.S.C. § 102(b) as anticipated by Jeffrey et al. ("Jeffrey");

6. Claims 1-6, 8, and 17 rejected under 35 U.S.C. § 102(b) as anticipated by Kyoko et al. ("Kyoko");

---

[3] We refer to the translation of Nakajima, et al. prepared for the USPTO by FLS, Inc. (PTO 07-6226 August 2007), and made of record in the Office Communication mailed August 31, 2007.

[4] We refer to the translation of Miyake, et al. prepared for the USPTO by FLS, Inc. (PTO 07-6225 August 2007), and made of record in the Office Communication mailed August 31, 2007.

[5] Although the claims are rejected based on the Japanese Kawakami reference ("Kawakami JP '922), the Examiner cites to the U.S. equivalent Kawakami patent ("Kawakami US '340") because "it was published in English" and belongs "to the same patent family" as Kawakami JP '922. (Ans. 3). Appellants have not objected to the Examiner's use of Kawakami US '340 as a translation of Kawakami JP '922. Therefore, we also rely on Kawakami US '340 as a translation of Kawakami JP '922 and refer exclusively to Kawakami US '340 in our analysis.

7. Claims 1-2, 4-5, 8, and 15-17 rejected under 35 U.S.C. § 102(a) as anticipated by the International Publication to Turner et al. ("Turner WO '532"); and

8. Claims 1 and 3-10 rejected under the doctrine of nonstatutory obviousness-type double patenting as obvious over claims 1-4 of the U.S. Patent to Turner et al. ("Turner US '336").

Appellants do not present separate arguments as to any particular claim. Accordingly, we decide the appeal on the basis of representative claim 1. 37 C.F.R. § 41.37(c)(1)(vii).

II. DISCUSSION

Claim Interpretation

The Examiner has rejected the claims under a claim interpretation in which the phrase "in form of an amorphous mixture" only refers to the claimed "electrochemically inactive elemental metal," rather than both the electrochemically active and inactive elemental metals. The Examiner also determined that the "consisting essentially of" limitation excludes the presence of crystalline regions or materials, but only for the "electrochemically active elemental metal." (Ans. 21).

Appellants argue that the "consisting essentially of" language requires the exclusion of any presence of intermetallic compounds or crystalline materials. (App. Br. 7 and 10). Appellants also argue that "[t]he language of claim 1 clearly requires the mixture to be amorphous," (i.e., that both the inactive and active elemental metals be in the form of an amorphous mixture rather than only the active elemental metal. (App. Br. 11).

We must address the following claim interpretation questions before we can address the merits of Appellants' and Examiner's contentions:

a. does the term "mixture" refer to a mixture of the inactive and active elemental metals or does it refer to a mixture of the active elemental metal with something else;

b. does the claim language require that the electrode material be completely free of crystalline material; and

c. does the claim language require that the electrode material be completely free of intermetallic compounds?

During examination, "claims . . . are to be given their broadest reasonable interpretation consistent with the specification, and . . . claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art." *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). We construe the claims based on Appellants' Specification as a whole. *Vitronics Corp. v. Conceptronic, Inc.,* 90 F.3d 1576, 1582 (Fed. Cir. 1996) ("[the specification] is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.").

Claim 1 calls for, among other features, "An electrode composition comprising: an electrode material consisting essentially of at least one electrochemically inactive elemental metal and at least one electrochemically active elemental metal in the form of an amorphous mixture…." (Claim 1).

Reviewing the Specification as a whole, we determine that one of ordinary skill in the art would construe claim 1 to require a mixture of the inactive and active elemental metals. We note that the examples disclose forming an "amorphous film" or an "amorphous melt-spun film" from both inactive and active elemental metals, which suggests that the claimed

"amorphous mixture" is the "amorphous film" including both the active and inactive metals. (Spec. 9, ll. 29-30; 11, ll. 3-4; 12, ll. 12-13; 13, ll. 5-6; 15, ll. 19-20). We further find it instructive that the examples of Appellants' Specification disclose performing x-ray diffraction and/or transmission electron microscopy (TEM) only after the film containing inactive and active metals (i.e., the "electrode material," rather than one of its constituents) was made and that such testing concerns a crystallinity determination for the entire material, i.e., the mixture of the active and inactive metals (e.g., "shows no peaks for crystalline aluminum, silicon, or manganese"). (Spec. 10, ll. 4-7; 11, ll. 4-13; 12, ll. 23-28; 13, ll. 17-20). Likewise, "[i]n situ x-ray diffraction measurements were performed" suggesting that it is a mixture of the inactive and active elemental metals which should be an amorphous mixture, rather than only the active metal. (Spec. 14, ll. 3-9). We also note that Appellants' Specification lacks any broad discussion related to the active elemental metal exclusively being analyzed for crystallinity or related to only one active metal being in the form of a mixture with something other than the inactive metal, to support the Examiner's interpretation. (*See* Spec., in entirety). Thus, we conclude that, based on the Specification as a whole, "mixture" as recited in claim 1 refers to a mixture of the inactive and active elemental metals, rather than a mixture including the electrochemically active elemental metal and something else.

Appellants' Specification defines "amorphous mixture" as "a mixture that lacks the long range atomic order characteristic of crystalline material." (Spec. 2, ll. 12-13). Since Appellants have provided a specific definition, we must use this definition in our analysis. *See Phillips v. AWH Corp.*, 415

F.3d 1303, 1316 (Fed. Cir. 2005) ("[T]he specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor's lexicography governs."). Thus, the term "amorphous mixture" requires there be no "long range atomic order," which would suggest to one of ordinary skill in the art that smaller range atomic orders of crystallinity, for example regions that are small, localized and/or spaced far apart within a sample material, are not necessarily excluded from the electrode material.

We recognize that claim 1 includes the phrase "consisting essentially of," signalling that the electrode material includes the listed ingredients, but not unlisted ingredients that materially affect the basic and novel properties of the invention. *PPG Industries v. Guardian Industries Corp.*, 156 F.3d 1351, 1354 (Fed. Cir. 1998). To establish that "consisting essentially of" excludes specific unlisted ingredients, Appellants bear the burden of: (1) showing the basic and novel characteristics of their claimed invention, and (2) establishing how those characteristics would be materially changed by any allegedly excluded component of an applied reference. *See In re DeLajarte*, 337 F.2d 870, 873-74 (CCPA 1964); *Ex parte Hoffman*, 12 USPQ2d 1061, 1063-64 (BPAI 1989). Appellants offer no analysis in support of their conclusory statement that "consisting essentially of" as used in their claim excludes either intermetallic compounds or crystalline materials as they argue (e.g., at App. Br. 7).

Further, we recognize that claim 1 calls for "An electrode composition *comprising*: an electrode material…." (Claim 1). The use of the open language "comprising" dictates that the electrode composition itself may include the claimed electrode material, however small the amount, and any

amount of any number of materials other than the claimed electrode material, including, for example, any intermetallic compounds or any non-crystalline materials.

With respect to crystallinity, Appellants' Specification describes "semi-crystalline" annealed film examples and that "the amorphous film had an irreversible capacity that was significantly lower than that of the annealed films." (Spec. 15, ll. 23-31). While these examples "for the sake of comparison" may demonstrate that the presence of some crystalline materials materially affects the basic and novel properties of the invention, we are not able to discern from these examples what concentrations of crystallinity would be excluded. At most, these examples would only suggest to one of ordinary skill in the art that the specific "semi-crystalline" films of the examples might be excluded by the "consisting essentially of" language. There is no evidence to suggest that the presence of other concentrations of crystalline material would necessarily materially affect the basic and novel properties of the claimed composition.

With respect to the presence of intermetallic compounds, even though Appellants' Specification states that "[t]he electrode material is essentially free of intermetallic compounds," the term "essentially" is added such that the presence of some intermetallic compounds is not necessarily excluded. More importantly, this language does not disclose or suggest that the presence of intermetallic compounds has any material effect on the properties of the invention, as would be required for intermetallic compounds to be excluded under the "consisting essentially of" language.

As such, we conclude that claim 1, as recited, does not require the electrode material to be completely free of any crystalline material or completely free of any intermetallic compounds.

Rejections based on Kawakami and Ito

The Examiner rejected claims 1-10 and 15-17 under 35 U.S.C. § 102(b) as anticipated by Kawakami JP '922 and claims 1, 3-7, 9, and 17 under 35 U.S.C. § 102(b) as anticipated by Ito. We discuss these rejections together because of the similarity of Appellants' arguments with respect to Kawakami JP '922 and Ito.

Appellants argue that Kawakami JP '922 and Ito do not describe an amorphous microstructure nor do they describe a method of manufacturing by which one can discern whether or not the references describe an amorphous microstructure. (App. Br. 6-7).

The Examiner responds that "all of the electrodes of the prior art have substantially the same composition as the electrode claimed by the appellant [sic, Appellants]." (Ans. 13). The Examiner suggests that this fact alone is sufficient to show inherency and that the burden has shifted to Appellants, who have not provided "objective or sound evidence…to satisfactorily overcome the above inherency (burden of proof) requirement." (Ans. 13 and 19). The Examiner also contends that it is not in the public's interest to allow "an application containing such a degree of ambiguity and/or uncertainty, like the present application," to pass to issue. (Ans. 16). The Examiner also argues that "appellant's [sic, Appellants'] classic example (i.e. graphite vs. diamond) calls for specific materials, compositions and crystalline microstructures, which are certainly quite different from

appellant's [sic, Appellants'] claimed amorphous material." (Ans. 19). The Examiner also contends that "[p]atentability of a product does not depend on method of making the same." (Ans. 20).

The issue on appeal arising from the contentions of Appellants and the Examiner is: is there factual basis for determining that either or both of Kawakami JP '922 and Ito inherently describes an amorphous mixture as claimed?

"To anticipate a claim, a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently." *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997).

Kawakami JP '922 describes the use of an anode which includes a metal capable of being alloyed with lithium and another metal incapable of being alloyed with lithium, which defines the active and inactive elemental metals as recited in claim 1. (Kawakami US '340, col. 3, ll. 53-55 and col. 13, ll. 35-45). Kawakami JP '922 describes providing these metals in one of three forms: (i) a composite formed by fixing powdery materials containing metals together using a binding agent (Kawakami US '340, col. 5, ll. 22-30); (ii) a plurality of small metallic materials of one of the metals spacedly arranged on the surface of an anode of the other metal, such as by immersing the anode metal in a salt solution of surface metal or by depositing a layer of the surface metal onto the anode metal using conventional deposition techniques (Kawakami US '340, col. 9, ll. 36-65 and col. 12, l. 59 to col. 13, l. 31); and (iii) an alloy of the metals. (Kawakami US '340, col. 6, ll. 25-27). While one or more of these forms may be considered a mixture, Kawakami JP '922 is silent as to the microstructure of the compositions and is silent as

to a method of forming the metal particles or the alloy. (*See* Kawakami US '340, in entirety).

Likewise, Ito describes "an Al-Si-Fe alloy which is capable of storing and releasing lithium in a reversible fashion is used as said cathode." (Ito, ¶ 4). However, Ito is silent as to the microstructure of the alloy and is silent as to the preparation of the Al-Si-Fe alloy powder used in the examples. (Ito, ¶ 8).

We determine that merely finding the claimed metals in an alloy or other mixture is not a basis in fact sufficient to reasonably support a position that it is inherent that the alloy is an "*amorphous* mixture." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (BPAI 1990) ("the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." (citations omitted)). Rather, as adequately identified by Appellants (App. Br. 4 and 9-10), various manufacturing techniques can create compositions having the same chemical constituents, but with different microstructures having different properties, such as the analogous example of graphite and diamond. However, the Examiner provides no evidence from Appellants' Specification or from the cited references that the descriptions of the materials in either Kawakami or Ito have any particular microstructure. Therefore, we determine that the Examiner has not established a prima facie case that Kawakami and Ito inherently describe an amorphous mixture. We cannot sustain the Examiner's rejections based on 35 U.S.C. § 102(b) over Kawakami or Ito.

Rejections based on Nakajima and Miyake

The Examiner rejected claims 1, 4-5, 7, and 17 under 35 U.S.C. § 102(b) as anticipated by Nakajima and claims 1-10 and 17 under 35 U.S.C. § 102(b) as anticipated by Miyake. Again, we discuss these rejections together because of the similarity of Appellants' arguments with respect to Nakajima and Miyake.

Appellants argue that Nakajima describes metal silicides in the form of "intermetallic silicides" and that the compositions always include at least some crystalline material. (App. Br. 7). According to Appellants, the claims exclude the intermetallic compounds and crystalline material of Nakajima because the claims "call for a composition 'consisting essentially of' electrochemically active and inactive elemental metals in the form of an amorphous mixture." (App. Br. 7). Likewise, Appellants argue that Miyake describes materials in the form of intermetallic compounds, which "are distinct from alloys" and which are excluded from the claims based on the "consisting essentially of" language. (App. Br. 8).

The Examiner disputes the Appellants interpretation of the "consisting essentially of" language and states that only the "at least one electrochemically active elemental metal" need be "in the form of an amorphous mixture." (Ans. 20-21).

The issue on appeal arising from the contentions of Appellants and the Examiner is: do the intermetallic compositions described in either or both of Nakajima and Miyake constitute an electrode material consisting essentially of an inactive metal and an active metal in the form of an amorphous mixture?

As discussed above, we interpret the claims to require an amorphous mixture of both the inactive and active elemental metals and such that the electrode material need not be completely free of intermetallic compounds in order to fall within the scope of claim 1. Nonetheless, claim 1 requires the active and inactive metals of the specified electrode material be "in the form of an amorphous *mixture*." (Claim 1).

Nakajima describes that "[t]he cathode material relating to this invention is an intermetallic silicide as previously described, with composition of $M_{100-x}Si_x$ (x >= 50 at %), M denoting at least one kind of element selected from Ni, Fe, Co and MN [sic, Mn]." (Nakajima, ¶ 12). Likewise, Miyake describes that

> cathode active substances using intermetallic compounds of at least 1 or more kinds selected from the element group of Al, Ge, Pb, Si, Sn, and Zn and metals or semimetals from other than the element group, wherein the intermetallic compounds which use cathode active substances have low crystallinity and wherein the intermetallic compounds which use cathode active substances are amorphous.

(Miyake, ¶ 7). While both Nakajima and Miyake clearly disclose that the electrode material may be amorphous, Nakajima and Miyake describe that the particular active and inactive metals combinations are intermetallic compounds. (Nakajima, ¶ 12; Miyake, ¶ 7).

One of ordinary skill in the chemical arts would have understood that "compounds" are not "mixtures," by definition. Compounds have the elements chemically united in specific proportions, whereas the substances within a mixture are not chemically united to each other. Therefore, we determine that the intermetallic compounds described in Nakajima and

Miyake do not constitute an electrode material consisting essentially of an inactive metal and an active metal in the form of an amorphous mixture. We cannot sustain the Examiner's rejections based on 35 U.S.C. § 102(b) over Nakajima or Miyake.

Rejections based on Jeffrey and Kyoko

The Examiner rejected claims 1-10 under 35 U.S.C. § 102(b) as anticipated by Jeffrey and claims 1-6, 8, and 17 under 35 U.S.C. § 102(b) as anticipated by Kyoko. Again, we discuss these rejections together because of the similarity of Appellants' arguments with respect to Jeffrey and Kyoko.

Appellants argue that Jeffrey describes a "conventional casting protocol" which "would not produce an amorphous alloy." (App. Br. 8). Likewise, Appellants argue that Kyoko describes alloys, which may include intermetallic compounds and that "the process described in Embodiments 1 and 10, which yield 'alloys,' include an annealing step characteristic of processes that produce crystalline materials." (App. Br. 8). Thus, Appellants argue that neither Kyoko nor Jeffrey inherently describe an amorphous mixture. (App. Br. 8).

The Examiner responds that Appellants' arguments lack "objective evidence demonstrating the validity and technical accuracy of such contention" and that "[a] statement or argument by the attorney is not factual evidence." (Ans. 21).

The issue on appeal arising from the contentions of Appellants and the Examiner is: is there factual basis for determining that either or both of Jeffrey and Kyoko inherently describes an amorphous mixture?

We agree with the Examiner that mere representative arguments regarding what one of ordinary skill in the art would have known about the amorphousness of materials prepared by casting procedures and annealing procedures is not sufficient evidence to overcome a finding of inherency.

However, although Jeffrey describes avoiding hot working or intermediate annealing conditions because alloying elements may precipitate in the microstructure (Jeffrey, col. 3, ll. 7-14), Jeffrey is silent as to the microstructure of the alloy described. Further, while Jeffrey describes forming an alloy using "a number of conventional casting procedures" (Jeffrey, col. 2, ll. 51-52), Jeffrey is silent as to the microstructure formed by the casting procedure.

Likewise, Kyoko is silent as to the described alloys microstructure. (*See* Kyoko). Also, Kyoko describes that "the components of the alloy are melted" followed by "an aging treatment or controlling cooling speed (for instance, gradual cool)," or, alternatively, that the alloy is "prepared by mixing the components with a mechanical alloying method, or a mechanical grinding method." (Kyoko 7, ll. 43-51). In embodiment 10, Kyoko also describes forming such an alloy "annealed at a temperature in a range of 300ºC to 500ºC." (Kyoko 20, ll. 44-46).

Thus, similar to the discussion of Kawakami and Ito discussed above, we determine that merely finding the claimed metals in an alloy or other mixture is not a basis in fact sufficient to reasonably support a position that it is inherent that the alloys taught by Jeffrey and Kyoko are an "*amorphous* mixture." *Ex parte Levy*, 17 USPQ2d at 1464. The Examiner provides no evidence from Appellants' Specification or from the cited references that the descriptions of the materials in either Kawakami or Ito have any particular

microstructure. To the contrary, the descriptions of slow cooling and annealing procedures in Kyoko are evidence that the composition forms a crystalline microstructure. Therefore, we determine that the Examiner has not established a prima facie case that Jeffrey and Kyoko inherently describe an amorphous mixture. We cannot sustain the Examiner's rejections based on 35 U.S.C. § 102(b) over Jeffrey or Kyoko.

Rejection based on Turner WO '532

The Examiner rejected claims 1-2, 4-5, 8 and 15-17 under 35 U.S.C. § 102(a) as anticipated by Turner WO '532. We address this rejection separately since Turner WO '532 provides further description of its microstructure which must be analyzed separately with respect to claim 1.

Appellants argue that Turner WO '532 describes the anodes "having a microstructure characterized by the presence of crystalline regions," which is "very different from the amorphous mixture that the claims require." (App. Br. 9). Appellants also argue that the "consisting essentially of" language "excludes the presence of such crystalline regions." (App. Br. 9).

The Examiner disputes the Appellants' interpretation of the "consisting essentially of" language and states that only the "at least one electrochemically active elemental metal" need be "in the form of an amorphous mixture." (Ans. 20-21).

The issue on appeal arising from the contentions of Appellants and the Examiner is: is there factual basis for determining that Turner WO '532 inherently describes an amorphous mixture?

As discussed above, we interpret the claims to require an amorphous mixture of both the inactive and active elemental metals and such that the

electrode material need not be completely free of crystalline material in order to fall within the scope of claim 1. As discussed above, we also concluded that the term "amorphous mixture" requires that there be no "long range atomic order," which suggests that smaller range atomic orders of crystallinity, for example regions that are small, localized and/or spaced far apart within a sample material, are not necessarily excluded from the electrode material.

Turner WO '532 describes "an electrode composition that includes (a) an electrochemically active metal element and (b) a non-electrochemically active metal element" and "includes crystalline regions having at least one dimension that is no greater than about 500 angstroms." (Turner WO '532, 1, ll. 15-19). Turner WO '532 describes that these crystalline regions "are very small, three-dimensional structures." (Turner WO '532, 5, ll. 17-18). Turner WO '532 also describes that "[t]he regions separating the crystalline regions do not exhibit an electron diffraction pattern characteristic of a crystalline material." (Turner WO '532, 2, ll. 23-25). Turner WO '532 describes that:

> the presence of these composition modulated areas [i.e., the amorphous areas] contributes to the ability of the electrode to retain its capacity after cycling because these areas are more flexible than the crystalline areas, enabling the composition as a whole to dissipate cycling-induced stresses that would otherwise cause the electrode to crack and fail.

(Turner WO '532, 6, ll. 16-19). Since Turner WO '532 describes that the crystalline regions are very small and that the regions between the crystalline regions would not be characteristic of crystalline material, i.e., amorphous, the material of Turner WO '532 would not be of sufficient "long range

atomic order" so as to fall outside Appellants' definition of an amorphous mixture. Thus, it is reasonable to conclude that the alloys taught by Turner WO '532 are inherently an amorphous mixture within the meaning of the claim.

Therefore, we find a factual or technical basis for determining that Turner WO '532 inherently describes an amorphous mixture. Thus, we sustain the Examiner's rejection based on 35 U.S.C. § 102(a) over Turner WO '532.

Rejection based on the non-statutory doctrine of obviousness type double patenting

Although the Examiner did not recite the double patenting rejection from the Final Office Action in the "Grounds of Rejection," the Examiner stated that

> [w]ith respect to the double patenting rejection, "appellant [sic, Appellants] did state that '*upon allowance of claims 1 and 3-10, applicants will submit a terminal disclaimer*' (refer to the 07/19/06 amendment at page 5, lines 6-8). Therefore, even though appellant [sic, Appellants] left unattended the double patenting rejection it appears that appellant [sic, Appellants] will acquiesces the validity of the double patenting rejection as the terminal disclaimer will be submitted at a later time.

(Ans. 21).

We determine that, based on this statement, the Examiner is maintaining the double patenting rejection on appeal. Since the Appellants were silent as to the double patenting rejection in the Appeal Brief and the Reply Brief, we summarily sustain the Examiner's rejection of claims 1 and

3-10 under the doctrine of non-statutory obviousness double patenting over Turner US '336. MPEP § 1205.02 ("if a ground of rejection stated by the examiner is not addressed in the appellant's brief, that ground of rejection will be summarily sustained by the Board.").

III. CONCLUSION

In summary:

(1) We do not sustain the Examiner's rejection of claims 1-10 and 15-17 under 35 U.S.C. § 102(b) as anticipated by Kawakami JP '922;

(2) We do not sustain the Examiner's rejection of claims 1, 3-7, 9, and 17 under 35 U.S.C. § 102(b) as anticipated by Ito;

(3) We do not sustain the Examiner's rejection of claims 1, 4-5, 7, and 17 under 35 U.S.C. § 102(b) as anticipated by Nakajima;

(4) We do not sustain the Examiner's rejection of claims 1-10 and 17 under 35 U.S.C. § 102(b) as anticipated by Miyake;

(5) We do not sustain the Examiner's rejection of claims 1-10 under 35 U.S.C. § 102(b) as anticipated by Jeffrey;

(6) We do not sustain the Examiner's rejection of claims 1-6, 8, and 17 under 35 U.S.C. § 102(b) as anticipated by Kyoko;

(7) We sustain the Examiner's rejection of Claims 1-2, 4-5, 8, and 15-17 rejected under 35 U.S.C. § 102(a) as anticipated by Turner WO '532; and

(8) We sustain the Examiner's rejection of claims 1 and 3-10 under the doctrine of nonstatutory obviousness-type double patenting as obvious over claims 1-4 of Turner US '336.

IV. DECISION

The decision of the Examiner is affirmed.

V. TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal maybe extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

tc

3M INNOVATIVE PROPERTIES COMPANY
P.O. BOX 33427
ST. PAUL, MN 55133-3427